##### Senegal is sub-Saharan country in West Africa where over 70% of the population is rural farmers. Climate change and desertification are making it difficult for farms to grow enough food and cash crops. Senegalese farmers use several lifetimes of knowledge to plant each year, and do adjust their planting techniques when one method doesn’t work to their advantage. You will take the role of Senegalese farming families and, after familiarizing yourself with the different crops, how they impact the soil, and two farming techniques, you will develop a 3-year planting plan for your crops to achieve the best yield.

##### Enduring Understandings

* Knowledge about soil science is critical for food production
* Many factors contribute to agricultural decision-making
* Climate and resource availability influence agricultural strategies

##### Essential Questions

* Why are soil nutrients important?
* How does the depletion of soil nutrients impact agricultural communities?
* How can scientific knowledge be used to solve real-world problems?

##### Vocabulary

* **Baleeri**: local name (in Gourel Yoba, Senegal) of soil that is heavy and able to hold water
* **Crop rotation**: Planting a crop from one family on a field during a season, then strategically planting a crop from a different family on that field the next season
* **Desertification**: The deterioration of the land due to loss of vegetation and soil moisture
* **Intercropping**: Strategically planting two or more crops from different families on a field during the same season
* **Kenyeri**: local name (in Gourel Yoba, Senegal) of light soil that holds little water
* **Food Security**: Access by all people at all times to enough food for an active, healthy life (about 2,000 calories per day). Food security includes, at a minimum, availability of nutritionally adequate and safe foods, and an assured ability to acquire food in socially acceptable ways.
* **Subsistence Farming:** Small scale farming for the purpose of growing food to meet the needs of the family and/or community, as opposed to commercial for-profit farming.
* **Malnutrition:**A state of poor nutrition resulting from an insufficient, excessive, or unbalanced diet, or from an inability to absorb food.

**Instructions**

1. You will access ‘The Growing Challenge in Senegal’ web quest at the following website: <http://www.peacecorps.gov/wws/educators/webquest/soil/course/course26681.html>
2. You will watch the video and ‘take’ the quizzes by watching the main screen. Use the information to fill out the Data Collection pages. Once you have completed that, you and your ‘family’ will develop a 3-year planting plan for your community.
3. Once you’ve developed your 3-year plan, we will run a simulation to see how well you have planned. You will use the Worksheet for Years 1, 2 and 3 for the simulation.

Simulation Worksheet:

Table 1: Year 1 Data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type/Crop** | **# of Fields (or half field)** | **Wet Yield Units** | **Dry Yield Units** | **Total Yield** |
| Mallow |  |  |  |  |
| Cotton |  | 40 | 60 |  |
| Legume |  |  |  |  |
| Peanut |  | 50 | 30 |  |
| Bean |  | 50 | 30 |  |
| Grass |  |  |  |  |
| Corn |  | 60 | 30 |  |
| Millet |  | 30 | 60 |  |
| Sorghum |  | 60 | 40 |  |
| Total Yield | | | |  |
| Impact Loss (from card) | | | |  |
| Total Yield After Impact | | | |  |
| Next Year’s loss from malnutrition | | | |  |

Table 2: Year 2 Data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type/Crop** | **# of Fields (or half field)** | **Wet Yield Units** | **Dry Yield Units** | **Total Yield** |
| Mallow |  |  |  |  |
| Cotton |  | 40 | 60 |  |
| Legume |  |  |  |  |
| Peanut |  | 50 | 30 |  |
| Bean |  | 50 | 30 |  |
| Grass |  |  |  |  |
| Corn |  | 60 | 30 |  |
| Millet |  | 30 | 60 |  |
| Sorghum |  | 60 | 40 |  |
| Total Yield | | | |  |
| Impact Loss (from card) | | | |  |
| Loss from last year’s malnutrition | | | |  |
| Total Yield After Impact & Malnutrition | | | |  |
| Next Year’s loss from malnutrition | | | |  |

Table 3: Year 3 Data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type/Crop** | **# of Fields (or half field)** | **Wet Yield Units** | **Dry Yield Units** | **Total Yield** |
| Mallow |  |  |  |  |
| Cotton |  | 40 | 60 |  |
| Legume |  |  |  |  |
| Peanut |  | 50 | 30 |  |
| Bean |  | 50 | 30 |  |
| Grass |  |  |  |  |
| Corn |  | 60 | 30 |  |
| Millet |  | 30 | 60 |  |
| Sorghum |  | 60 | 40 |  |
| Total Yield | | | |  |
| Impact Loss (from card) | | | |  |
| Loss from last year’s malnutrition | | | |  |
| Total Yield After Impact & Malnutrition | | | |  |